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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/675,323

09/29/2003

Yu-Cheng Hsu

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EXAMINER

RIAD, AMINE

ART UNIT

PAPER NUMBER

2113

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/675,323

Applicant(s)

HSU ET AL.

Examiner

Amine Riad

Art Unit

2113

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-5, 7-9, 11-15, 17-19, 21-30 is/are rejected.
- 7) ☒ Claim(s) 6, 10, 16 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) *AR*
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) *AR*  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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## DETAILED ACTION

Claims 1-30 are presented for examination.

Claims 1-5, 7-9, 11-15, 17-19, 21-30 are rejected.

Claims 6, 10, 16, 20 are objected to.

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 21-30 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

#### ***Claims 21-30:***

The language of the claims raise a question as to whether the claims are directed merely to an abstract idea that would not result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101.

In summary, Claims (21-30) recite the article of manufacture. The recited invention is computer software *per se*. A computer program is merely a set of instructions capable of being executed by a computer. The computer program itself is not a statutory process in that it does not include the computer-readable medium needed to realize the functionality of the computer program. Thus, as currently recited, Claims 21-30 are directed to an abstract idea that does not produce a concrete, useful and tangible result.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 7-8, 11-13, 17-18, 21-23 and 27-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Greenspan Patent Application Publication 2004/0236987.

In regard to claims 1, 11, and 21,

Greenspan discloses a method, comprising: partitioning a plurality of processing nodes in a storage system into a plurality of logical processing units,(Figure 1; items 105[a-n]) and (Page 3; paragraph 45 “The platform provides large pool of processors from which a subset may be selected” ) where the plurality of logical processing units can respond to I/O requests from a host coupled to the storage system;(Page 3; paragraph 45 “The virtualization may include the virtualization of I/O” [Since the system may include the virtualization of I/O this means that the system has I/O requests]) and (Figure 1; item= local storage and SAN storage)

- grouping at least two logical processing units,(Page 3; paragraph 45 “a subset may be selected” [ a subset can be 2, 3, or more] )

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- data in a first storage coupled to a first logical processing unit of the least two logical processing units is mirrored by data in a second storage coupled to the second logical processing unit of the at least two logical processing units; (Page 2; paragraph 29 “ the failover site can more quickly mirror the primary site’s processing resources (considered data).”)
- and in response to a failure of the first logical processing unit, responding to an I/O request from the host via the second logical processing unit.(Page 2; paragraph 28 “ Preferred embodiments of the invention provide a system and method that enables the efficient failover of processing resources (data stored in the first site) to a second failover.”)

In regard to claims 2, 12, and 22,

Greenspan discloses the method of claim 1, wherein the storage system has at least two processing nodes,

- the plurality of logical processing units are distributed across the at least two processing nodes, (Figure 1; item=processing nodes105)
- one processing node includes a plurality of central processing units, (Figure 1; items 106) and (Page 3; paragraph 47 “Each processing node 105 is a board that includes processors”)
- in the event of the failure of the first logical processing unit, the plurality of processing nodes stay operational.(Page 4; paragraph 57 “a processor node may

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communicate directly with another via a corresponding virtual interface 212” [the node is defined in the reference as a board with processors connected to it. It is inherent if a first processor fails the rest of the processing nodes would remain operational])

In regard to claims 3, 13, and 23

Greenspan discloses the method of claim 1, wherein an administrative console is coupled to the plurality of processing nodes of the storage system, (Page 5; paragraph 61 “To create and configure such networks, an administrator defines the network topology of a PAN (via a utility within the management software 135 in figure 1) ”)

Further comprising:

- prior to partitioning, processing, at the administrative console, information on processing requirements, memory requirements and host bus adapter requirements for the plurality of logical processing units.(Page 5; paragraph 68 “As outlined, configuration state may specify all processing resources at the primary site”) and (Page 6; paragraph 109 “Resource information”[ resource information is interpreted as information on processing, memory requirements]) and (Page 6; paragraph 74 [1GB eth is considered as a Bus])

In regard to claims 7, 17, and 27

Greenspan discloses the method of claim 1, further comprising:

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- Receiving a write request from the host to the plurality of processing nodes in the storage system; writing, by one or more partitioning applications, data corresponding to the write request to the first storage coupled to the first logical processing unit and the second storage coupled to the second logical processing unit. (Page 7; Paragraph 144 “This allows the system to write the data” [if the system is allowed to write data that means the system allowed a request to write data] and (Figure 1 shows how the coupling is done between the storages and the processing units.))

In regard to claims 8, 18, and 28

Greenspan discloses the method of claim 1, further comprising:

- Receiving a read request from the host to the plurality of processing nodes in the storage system; and reading, by one or more partitioning applications, data corresponding to the read request from the first storage coupled to the first logical processing unit. (Page 7; Paragraph 144 “write the data at the primary site and read It back at the failover site”[the system reads back only after receiving a request to read])

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 14, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenspan Patent Application Publication 2004/0236987 in view of Dawkins US Patent 6,901,537.

In regard to claims 4, 14, and 24

Greenspan discloses one or more partitioning applications that are coupled to the plurality of logical processing units as recited in parent claims 1, 11, and 21.

Greenspan does not disclose:

- Starting initial program load of the first logical processing unit, in response to grouping at least two logical processing units .
- Determining via the partitioning application an identification of the second logical processing unit grouped with the first logical processing unit.
- Presenting common resources to the first and second logical processing units by the partitioning application.

Dawkins teaches:

- Starting initial program load of the first logical processing unit, in response to grouping at least two logical processing units.(Column 5; lines 32-36 [when the partitions are instantiated is interpreted as grouped])
- Determining via the partitioning application an identification of the second logical processing unit grouped with the first logical processing unit, and presenting



common resources to the first and second logical processing units by the partitioning application.(Column 3; lines 18-19, and lines 20-28 [when data processing system 100 is divided, it identifies the grouping of partition 1, partition 2, and partition 3 as disclosed] and [all the resources (graphics adapter, local memory, ) are assigned to different partitions is interpreted as presenting common resources to the first partition, and second partition])

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the features of starting initial program load of grouped logical processing units, determining an identification of the second processing unit grouped with the first logical processing unit, and presenting common resources to the first and second logical processing units of Dawkins into the partitioning of processing nodes in a storage system into a plurality of logical processing units of Greenspan.

A person of ordinary skill in the art would have been motivated to make this modification because as Dawkins discloses “ software errors in the control of an OS’s allocated resources are prevented from affecting the resources of any other image”, and therefore a fault recovery will be limited to only the common affected resources, and not propagated to other ones.

Claims 5, 15, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenspan Patent Application Publication 2004/0236987 in view of Bobak Patent Application Publication 2003/0140069.

In regard to claims 5, 15, and 25

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Greenspan discloses partitioning a plurality of processing nodes in a storage system into a plurality of logical processing units as recited in parent claims 1, 11, and 21.

Greenspan does not disclose:

- receiving from the first logical processing unit, a request for memory access of a logical processing unit;
- determining, by one or more partitioning applications coupled to the plurality of logical processing units, whether the logical processing unit is grouped with the first logical processing unit;
- if the logical processing unit is grouped with the first logical processing unit, then allowing the memory access of the logical processing unit to the first logical processing unit;
- if the logical processing unit is not grouped with the first logical processing unit, then preventing the memory access of the logical processing unit to the first logical processing unit.

Bobak teaches:

- Receiving from the first logical processing unit, a request for memory access of a logical processing unit; (Page 2; Paragraph 19 “the service processor receives the requests for the data capture along with memory range” )
- Determining by one or more partitioning applications coupled to the plurality of logical processing units, whether the logical processing unit is grouped with the

first logical processing unit; (Page 2; Paragraph 19 “ the request for a data capture can be made by using any conventional inter-partition communication partition”)

- if the logical processing unit is grouped with the first logical processing unit, then allowing the memory access of the logical processing unit to the first logical processing unit;(Page; Paragraph 19 [by using inter-partition communication mechanism the access is only granted to the partitions which communicate with each other (grouped together)])
- if the logical processing unit is not grouped with the first logical processing unit, then preventing the memory access of the logical processing unit to the first logical processing unit.(It is inherent when the inter- partition communication mechanism grants access to only that communicate with each other it will not grant access to the ones not communicating with each (not grouped together) )

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the receiving from the first logical unit a request for memory access, and determining whether the logical processing unit is grouped with the first logical processing unit of Bobak into the partitioning of processing nodes in a storage system into a plurality of logical processing units of Greenspan.

A person of ordinary skill in the art would have been motivated to make this modification because as Bobak discloses “such a data capture, may be completed quickly and efficiently as it requires no inter-partition communication ”, and therefore making the communication in critical times such as time to recover from a fault fast, and efficient.

Claims 9, 19, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenspan Patent Application Publication 2004/0236987 in view of Dawkins US Patent 6,665,759.

In regard to claims 9, 19, and 29

Greenspan discloses partitioning a plurality of processing nodes in a storage system into a plurality of logical processing units as recited in parent claims 1, 11, and 21.

Greenspan does not disclose that the partitioning application comprises a hypervisor application of redundant system.

Dawkins teaches a partitioning application which comprises a hypervisor. (Abstract)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a hypervisor of Dawkins into the partitioning of processing nodes in a storage system into a plurality of logical processing units of Greenspan.

A person of ordinary skill in the art would have been motivated to make this modification because managing processes in a logically partitioned environment with the help of hypervisor would recover the system faster.

***Allowable Subject Matter***

Claims 6, 10, 16, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Patent application publication 2002/0156612 teaches most of the limitations, but misses that the failure happens in the first logical processing unit, on the other hand U.S. patent 5,072,373 contains some elements, but lacks important element, which is the failure. See PTO 892.

### **Contact**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amine Riad whose telephone number is 571-272-8185. The examiner can normally be reached on 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on 571-272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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